

The amendments below are presented in accordance with the Notice promulgated January 31, 2003 by the U.S. Patent and Trademark Office and included in the instant Office Action.

IN THE CLAIMS:

Please amend the claims as follows.

1. - 14. (Withdrawn)

15.- 30. (Canceled)

31. (Withdrawn)

32. (Currently amended) A semiconductor device comprising:

a semiconductor film formed on an insulating surface;

a channel forming region in the semiconductor film;

a gate insulating film formed on the semiconductor film;

a gate electrode formed over the channel forming region with the gate insulating film interposed therebetween;

a pair of side walls adjacent to side surfaces of the gate electrode;

a pair of first impurity regions doped with an N-type impurity at a first concentration and formed in the semiconductor film with the channel forming region extending therebetween wherein the pair of side walls only overlap the pair of first impurity regions; and

a pair of second impurity regions doped with an N-type impurity at a second concentration greater than the first concentration and formed in the semiconductor film adjacent to the pair of first impurity regions; and

a pair of third impurity regions doped with an N-type impurity at a third concentration greater than the second concentration and formed in the semiconductor film with the pair of second impurity regions extending between the channel forming region and the pair of third impurity regions.

33. (Previously presented) The semiconductor device according to claim 32 wherein the N-type impurity added in the first, second and third impurity regions comprises an element selected from the group 15 elements.

34. (Previously presented) The semiconductor device according to claim 32 wherein the N-type impurity added in the first, second and third impurity regions comprises phosphorous.

35. (Previously presented) The semiconductor device according to claim 32 wherein the side walls comprise silicon.

36. (Previously presented) The semiconductor device according to claim 32 wherein the semiconductor device is one selected from a liquid crystal display device, an EL display device and an image sensor.

37. (Previously presented) The semiconductor device according to claim 32 wherein the semiconductor device is one selected from a video camera, a digital camera, a projector, a goggle type display, a car navigation device, a personal computer and a portable information terminal.

38. (Currently amended) A semiconductor device comprising:
a semiconductor film formed on an insulating surface;
a channel forming region in the semiconductor film;
a gate insulating film formed on the semiconductor film;
a gate electrode formed over the channel forming region with the gate insulating film interposed therebetween;
a pair of conductive side walls adjacent to side surfaces of the gate electrode;
a pair of first impurity regions doped with an N-type impurity at a first concentration and formed in the semiconductor film with the channel forming

region extending therebetween wherein the pair of side walls only overlap the pair of first impurity regions; and

a pair of second impurity regions doped with an N-type impurity at a second concentration greater than the first concentration and formed in the semiconductor film adjacent to the pair of first impurity regions; and

a pair of third impurity regions doped with an N-type impurity at a third concentration greater than the second concentration and formed in the semiconductor film with the pair of second impurity regions extending between the channel forming region and the pair of third impurity regions.

39. (Previously presented) The semiconductor device according to claim 38 wherein the N-type impurity added in the first, second and third impurity regions comprises an element selected from the group 15 elements.

40. (Previously presented) The semiconductor device according to claim 38 wherein the N-type impurity added in the first, second and third impurity regions comprises phosphorous.

41. (Previously presented) The semiconductor device according to claim 38 wherein the side walls comprise silicon.

42. (Previously presented) The semiconductor device according to claim 38 wherein the semiconductor device is one selected from a liquid crystal display device, an EL display device and an image sensor.

43. (Previously presented) The semiconductor device according to claim 38 wherein the semiconductor device is one selected from a video camera, a digital camera, a projector, a goggle type display, a car navigation device, a personal computer and a portable information terminal.

44. (Currently amended) A semiconductor device comprising:

(a) a thin film transistor over a substrate, said thin film transistor comprising:

a semiconductor film formed on an insulating surface;

a channel forming region in the semiconductor film;

a gate insulating film formed on the semiconductor film;

a gate electrode formed over the channel forming region with the gate insulating film interposed therebetween;

a pair of side walls adjacent to side surfaces of the gate electrode;

a pair of first impurity regions doped with an N-type impurity at a first concentration and formed in the semiconductor film with the channel forming region extending therebetween wherein the pair of side walls only overlap the pair of first impurity regions; and

a pair of second impurity regions doped with an N-type impurity at a second concentration greater than the first concentration and formed in the semiconductor film adjacent to the pair of first impurity regions; and

a pair of third impurity regions doped with an N-type impurity at a third concentration greater than the second concentration and formed in the semiconductor film with the pair of second impurity regions extending between the channel forming region and the pair of third impurity regions;

(b) an interlayer insulating film formed over the thin film transistor; and

(c) a pixel electrode formed over the interlayer insulating film and electrically connected to one of the third impurity regions.

45. (Previously presented) The semiconductor device according to claim 44 wherein the N-type impurity added in the first, second and third impurity regions comprises an element selected from the group 15 elements.

46. (Previously presented) The semiconductor device according to claim 44 wherein the N-type impurity added in the first, second and third impurity regions comprises phosphorous.

47. (Previously presented) The semiconductor device according to claim 44 wherein the side walls comprise silicon.

48. (Previously presented) The semiconductor device according to claim 44 wherein the semiconductor device is one selected from a liquid crystal display device, an EL display device and an image sensor.

49. (Previously presented) The semiconductor device according to claim 44 wherein the semiconductor device is one selected from a video camera, a digital camera, a projector, a goggle type display, a car navigation device, a personal computer and a portable information terminal.

50. (Currently amended) A semiconductor device comprising:

(a) a thin film transistor formed over a substrate, said thin film transistor comprising:

a semiconductor film formed on an insulating surface;

a channel forming region in the semiconductor film;

a gate insulating film formed on the semiconductor film;

a gate electrode formed over the channel forming region with the gate insulating film interposed therebetween;

a pair of conductive side walls adjacent to side surfaces of the gate electrode;

a pair of first impurity regions doped with an N-type impurity at a first concentration and formed in the semiconductor film with the channel forming region extending therebetween wherein the pair of side walls only overlap the pair of first impurity regions; and

a pair of second impurity regions doped with an N-type impurity at a second concentration greater than the first concentration and formed in the semiconductor film adjacent to the pair of first impurity regions; and

a pair of third impurity regions doped with an N-type impurity at a third concentration greater than the second concentration and formed in the semiconductor film with the pair of second impurity regions extending between the channel forming region and the pair of third impurity regions;

(b) an interlayer insulating film formed over the thin film transistor; and

(c) a pixel electrode formed over the interlayer insulating film and electrically connected to one of the third impurity regions.

51. (Previously presented) The semiconductor device according to claim 50 wherein the N-type impurity added in the first, second and third impurity regions comprises an element selected from the group 15 elements.

52. (Previously presented) The semiconductor device according to claim 50 wherein the N-type impurity added in the first, second and third impurity regions comprises phosphorous.

53. (Previously presented) The semiconductor device according to claim 50 wherein the side walls comprise silicon.

54. (Previously presented) The semiconductor device according to claim 50 wherein the semiconductor device is one selected from a liquid crystal display device, and EL display device and an image sensor.

55. (Previously presented) The semiconductor device according to claim 50 wherein the semiconductor device is one selected from a video camera, a digital camera, a projector, a goggle type display, a car navigation device, a personal computer and a portable information terminal.

56. – 59. (Canceled)